Virologists unravel mystery of late C20th gibbon leukaemia outbreak

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The mystery of an outbreak of lymphoma and leukaemia in gibbon colonies in the US, Bermuda and Thailand in the late 1960s and early 1970s has been solved by animal disease detectives at The University of Nottingham.

The virology experts from the University's Vet School have carried out an investigation into the cancer outbreak which was caused by the gibbon ape leukaemia retrovirus (GALV). They found it was most likely caused inadvertently by the unregulated international trading of gibbons and laboratory work on viruses in US military and other medical research facilities.

In a paper published in *Mammal Review*, the researchers crucially also found no evidence of infection in current populations of captive gibbons - an endangered species - and no evidence that the virus is still a threat.

Lecturer in Veterinary Cellular Microbiology, Dr Rachael Tarlinton, explained: "We thought the strange outbreak of gibbon ape leukaemia and lymphoma in certain colonies fifty years ago was an enigma worth investigating, not least to see if we could find any evidence that GALV is still a problem among live populations today.

"Our review brings together published literature and laboratory records from early research into GALV which is a known contaminant of laboratory cell culture. We also analysed correspondence about the transportation of gibbons during the 60s and 70s, laboratory and

zoological records to discover the origin of the retrovirus and how it could have been transmitted."

The investigation found that lymphoma and leukaemia were not recorded in gibbons until the 1960s when cases were reported in gibbons in or imported to the US from south-east Asia. In 1969 cases of malignant lymphoma were reported in a single colony of white-handed gibbons in a US military research facility in Bangkok, Thailand and were at the time attributed to an unknown infectious agent. This agent was identified as GALV retrovirus, which was not native to the species, two years later when five more gibbons in the same colony were diagnosed with leukaemia.

The researchers found that the virus was almost certainly inadvertently transmitted to the gibbons from rodents by medical researchers working on human diseases such as malaria and dengue fever.

The team also found that the unregulated trading of research gibbons at the time may have even caused GALV infection found in a monkey kept as a pet in a San Francisco apartment which went on to develop lymphosarcoma.

Co-investigator, Dr Katherine Brown, now at Oxford University, said: "When we analysed the genetic sequence of the retroviruses in these animals it told us the same information as the historical documents, that they have come from the same source, which is what we expected.

"It is very reassuring that we found no evidence that, although this was a serious outbreak 50 years ago, we now know how it came about and that it was a single event exacerbated by human intervention. The risk of it ever happening again is now thankfully very low".

Provided by University of Nottingham